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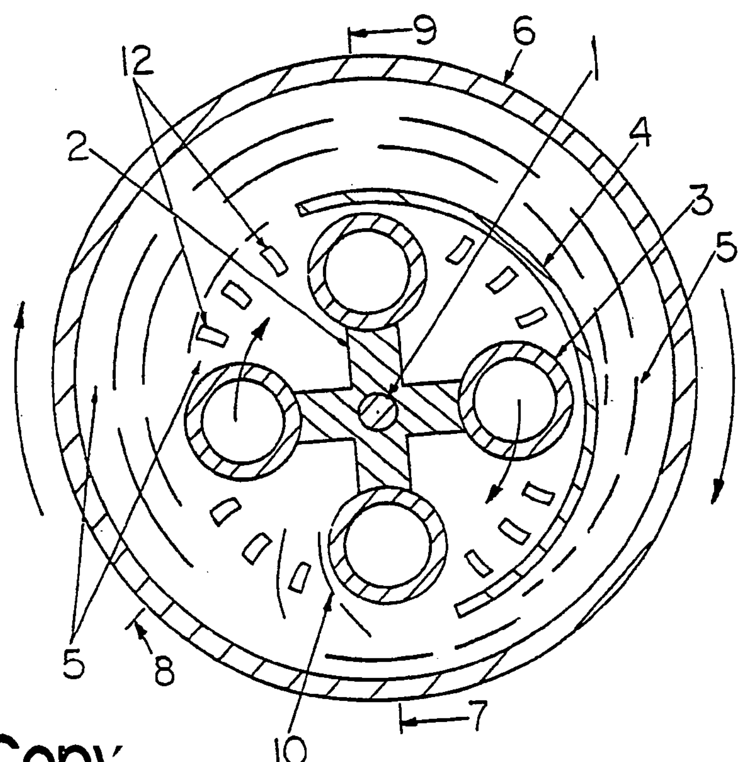
(54) Title: BUOYANCY DYNAMIC INDUCTION/RELATIVE GRAVITY ENERGY PRODUCTION METHOD

(57) Abstract

An improved generic two stage method of energy production utilizing buoyancy effect of elements of different specific gravities interacting (3, 5), said elements being in motion and changing direction of said motion. Induction stage utilizes geometric angular differentials, or valving in combination with angular momentum effects and/or partial decomposition of an element or elements for induction means of elements of a certain specific gravity (3) into the general outer peripheral area of travel of a closed cycle path of a moving element or elements of a relatively greater specific gravity (5). Power output stage following said induction stage and in combination therewith utilizes velocity and direction changes of the element or elements of greater specific gravity (5) to enhance operating pressures, which is translated into effect upon element of lesser specific gravity (3) and in turn is expressed in a means of power output (1) such as rotary motion, direct electricity generation within the operating cycle, or thermal generation within the operating cycle.



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Description

Bouyancy Dynamic Induction/Relative Gravity Energy Production Method

Technical Field

This generic invention relates to energy production and specifically to an improved method of internal energy transfer in combination with higher operating pressures than most prior art develops, utilizing elements in motion of different specific gravities, one or more being a fluid, to generate said energy production.

Background Art

Historically, bouyancy power production systems employ elements of different specific gravities, the heavier one usually a fluid, and usually operate by a means of immersing the lighter element in the heavier, thereby requiring energy expenditure for said immersion since in this stage the heavier element is "raised upward" from the surface of the Earth in correspondence with said immersion of the lighter element. Usually, for the power output stage utilizing bouyancy for energy production devices, a means is employed to harness the bouyancy effect of the lighter element as it rises to the surface of the heavier element per specific gravity differentials between said elements. Upon completion of such a cycle of operation, the heavier element has returned to its original position relative to the surface of the Earth. Normally, only the Earth's gravitational force is relied upon to produce interacting operational pressures, causing power production.

By contrast, this invention may also employ the Earth gravitational field as a secondary effect, but the prime operational pressure generation is achieved by imparting

velocities and changes of the direction to the working elements as will be set forth, in detail, later in preferred embodiments, said invention thus being capable of creating vastly greater operating pressures, hence vastly greater power output (not considering immersion energy requirements for the moment) than that produced by relying solely upon the effects of the Earth's gravitational field upon the respective working elements. I term this aspect of my invention "Relative Gravity", which will also be described further in my "Definition of Terms" section. Relative Gravity is the developed force in the power output stage of this two stage invention, and besides meeting with internal operational requirements is translated into an appropriate means of external energy expression into such forms as rotary motion, internal cycle electricity generation, and internal cycle heating and/or cooling generation.

Historically, the vital factor of immersing the lighter element in the heavier with less expenditure of energy than that later derived when the lighter element rises through the heavier is usually attempted by a variety of means such as variable displacement floats that are filled with a gas near the bottom of their travel; or membranes to attempt to reduce or eliminate the bouyancy effect on some segments of an immersed element; or partial decomposition of the heavier element, a liquid, into a gas under the lower area of float travel and directed into individual open bottomed containers mounted upon an assembly to effect rotary motion from the lifting effort, or a slowly rotating fluid filled cylinder with a horizontal axis of rotation, with floats therein of a lesser specific gravity than said fluid, utilizing a means of energy transfer between fluid and floats; and the like. As a matter of practicality the operational success of most prior bouyancy power production methods has usually ranged from limited to zero.

By contrast, this invention solves the vital immersion stage energy transfer requirements by imparting velocity to the heavier and lighter elements, and by channeling them in such a way that Issac Newton's Laws of Motion and Bernoulliis' Principles of Velocity and Pressures relating to fluid movement may be employed, together if desired with the self-cancelling aspects of angular momentum action, to place the lighter element into the heavier by an efficient energy transfer means. In one species of this invention an "equivalent immersion" is achieved by electrolytic decomposition of the heavier moving element in order to form a lighter "element" (some preferred embodiments use a gas as the lighter element), and after the power output bouyancy effect is achieved in the cycle of operation, said "lighter" element is then recombined in a dynamic manner back into its original fluid form. Catalysts may be employed for both decomposition and recombination of said element. These methods of immersion together with others which will later be elaborated upon herein, constitute the vital factors of the first stage of this two stage invention, and said immersion methods are termed to be "Dynamic Induction" and will be further described in the "Definition of Terms" section herein.

Disclosure of Invention

Accordingly, several objects of this invention are — To utilize a two stage generic Method consisting of an Induction Stage and a Power Output Stage:

(1) Said Induction Stage utilizing energy transfer between the respective working elements of different specific gravities to achieve an induction of a moving element or elements of lesser specific gravity into the general outer peripheral area of travel of a closed cycle path of an element and/or elements of a greater specific gravity.

(2) Said Power Output Stage follows in sequence to and in combination with the aforementioned Induction Stage. Power Output Stage objective is to utilize and to maximize to a greater degree than prior art the power output derivation from the translated velocities and changes of direction of the moving elements in combination with the effects of elements of different specific gravities inter-reacting.

Said generic method to be accomplished by embodiments ranging from minimal efficiency and/or power output capabilities with relatively modest cost to and through more sophisticated embodiments of higher efficiency and/or power output capabilities with greater cost. Said method to express power output external to the unit by means which include but are not limited to: Rotary and reciprocating mechanical motion, electricity from internal production means of said unit, heating and/or cooling from internal production means of said unit.

Definition of Terms

Certain terms in this generic invention are hereby defined:

(1) Bouyancy Dynamic Induction/Relative Gravity Energy Production Method (title) — a two stage energy production method utilizing the bouyancy effects of moving elements of different specific gravities as related to the velocities and directions of movement of said elements.

(2) Dynamic Induction — Utilizing velocities and changes of direction of related elements to achieve an immersion and to include equivalent immersion of an element of a certain specific gravity into one of a greater specific gravity.

(3) Relative Gravity — Utilizing velocities and change

of direction of the element of greater specific gravity in the operation to create higher operating pressures therein than those normally obtained by prior art, in combination with the aforementioned Dynamic Induction.

(4) Base Element — That element and/or combination of elements in the periodic table of elements covering all known physical elements which has a greater specific gravity than the other category of working element and/or combination of elements of a lesser specific gravity which is/are used herein.

(5) Light Element — That element and/or combination of elements of relatively lesser specific gravity which is/are immersed in the Base Element and subsequently is moved by Relative Gravity to an area of lesser pressure within the Base Element, thence therefrom.

(6) Respective Generic Species — Three Species are set forth:

A. Base Element/Fixed Displacement Light Element
   1. Rigid Light Element
   2. Liquid Light Element

B. Base Element/Variable Displacement Light Element
   1. Gas/Liquid Light Element
   2. Extended Engine

C. Base Element/Derived Light Element
   1. Electrolysis

(7) Preferred Embodiment Titles and Brief Distinctions

Species A: Base Element/Fixed Displacement Light Element

/1/ Rotating Outer Case Engine — Outer case movement used to propel Base Element.

/2/ Fixed Outer Case Engine — Outer case stationary with internal moving member to propel Base Element.

/3/ Side Rotating Outer Case Engine — Outer case propels Base Element with element flow in one general area diverted somewhat in the cylindrical plane parallel to axis of shaft rotation.

/4/ Fixed Case Sideflow Engine — Flow pattern as in /3/ with internal impellor moving Base Element.

/5/ Extended Case Engine — Base Element flows in a "racetrack" pattern.

/6/ Rotating Extended Case Engine — same as /5/ plus additional energy recovery feature.

/7/ Wave/Extended Case Engine — same Base Element flow pattern as /5/ with internal wave production for Dynamic Induction.

/8/ Shroudless Engine — substitutes rotor velocity change for shroud.

Species B: Base Element/Variable Displacement Element

/9/ Circular Gas Engine — Light Element is a gas circular flow or Light Element Liquid circular flow

/10/ Extended Gas Engine — Light Element is a fluid — "racetrack" pattern flow

/11/ Species C: Electrolysis Engine

1. Constant Polarity Engine
2. Changing Polarity Engine

/12/ Options: Fluid Friction Energy Recovery — All embodiments where applicable may utilize a relatively slow movement of the outer case connected by a suitable means to a faster movement of the power rotor for a means of recovering the fluid friction losses between the relatively stationary members and faster moving ones.

/13/ Options: Electricity Generation Mode — All embodiments if desired may utilize a fluid flow carrying or consisting of an electrolyte which is in correspondence with a magnetically dissimilar element in the stationary or relatively stationary case, causing electrical generation by conventional means as is known in present electricity generation art. Another electrical generating mode would be to directly embody conventional electrical generation elements in the rigid moving and non-moving structural members.

/14/ Options: Thermal Generation Mode — All embodiments may directly incorporate within the cycle of operation heat exchange devices such as are normally found now in the states of refrigeration and heating arts, i.e. self powered cooling and heating units would result therefrom.

Discussion of and Specific Comparison with Prior Art: A review of prior art and comparison with my invention teaches: 221,779 Cayce November 18, 1879 employs a fluid filled horizontally rotating cylinder relying upon gravity of the Earth for bouyance effort. Employs floats therein of lesser specific gravity and specifies "when it ceased to act," (float)........ "is now turned by rotation of the cylinder to the bottom" etc. clearly implying the gravitional field of the Earth is the motive force. Even if the additional effect of rapid rotation of the fluid filled cylinder was realized, this invention would still have had no practical value for power production because the changes of angular momentum of the float toward and away from the center of the cylinder rotation would have been self cancelling.

By contrast, my invention by virtue of high velocities

and change of direction of the Base Element is capable of developing tremendous operating pressures independent of the effects of the Earth's gravitional field (Relative Gravity).

Further, in combination with Relative Gravity, a means other than angular momentum effects is employed in this invention (Bernoullii and Newtonian principles) and in some species of my invention angular momentum is also used in combination with other means to immerse a Light Element into the Base Element, 3,466,866 Eschenfeld, Sept. 16, 1969 (CL60-22), employed a rotatable cage like member having a central hub with a compressed air inlet adapted to operate below the level of a body of water with inflatable float radians — relies on Earth's gravitational field and inflatable means must overcome the weight of the surrounding water.

By comparison, my invention uses Relative Gravity in combination with Newtonian and Bernoullii principles upon the respective elements to immerse with less effect than Eschenfeld's art. 2,415,124 Caminiti Feb. 4, 1947 (CL60-22) teaches the use of the Earth's gravitational field, "which causes the cylinder to become a float cylinder at the lower end of the tank," etc. Teaches "a tubiform shaft open to the atmosphere", etc.

Variable displacement floats are in water at all times, the amount of effort required to increase displacement versus power output is critical. 4,095,426 Rhodes Jan. 20, 1978 — utilization of Earth's gravitational field in combination with solar energy.

3,934,964 Diamond Jan. 27, 1976 — utilizes Earth's gravitational field both for bouyancy in primary sense and internal weight and interconnection of individual effort. Specified "gravity" and teaches orientation of working elements thereto.

3,857,242 Gilmore Dec. 21, 1974 — teaches "use of gravity" for bouyancy and direct weight.

2,513,136 Borsos June 27, 1950 — pertains to electrolysis in combination with bouyancy. Teaches "any suitable kind of electrolyte may be used" and utilizes a stationary liquid chamber wherein the internal liquid pressures are basically determined by "normal gravity." This prior art and the following one will be considered together in comparison to the electrolytically derived Species C. of my invention.

4,084,375 Horvath April 18, 1978 — teaches bouyancy in combination with <u>electrolysis only of water</u> as compared to Borsos "any suitable kind of electrolyte." Teaches separation of hydrogen and oxygen which is unnecessary for my invention's performance. Teaches use of Earth's gravity only, and specifically cites as an advantage possible use in large bodies of water. Teaches <u>"Furthermore, it is proven that the electrolytic process operates more efficiently under greater pressures, as may be obtained in such large bodies of water</u>." Teaches feedback of the generated electricity to help run the process.

In comparison, my invention employs a high speed movement and change of direction of the electrolyte which is capable of generating tremendous operational pressures upon said electrolyte, vastly exceeding these pressures normally possible by relying upon the depth of a body of water. Essentially, when a concentric path for the electrolyte is prescribed, i. e. rotation about a central axis, the increase in operating pressure is, of course, that pertaining to centrifugal/centrepital force, i.e. the pressure increase upon the electrolyte will increase approximately as the square of the velocity of the Base Element. This is, of course, true for all such embodiments.

It is emphasized that my invention can use electrolytes other than water, as well as water.

Further, my invention utilizes a closed cycle mode of operation in which the moving electrolyte is decomposed by electrical means, the rising gases through the fluid moving

toward the center of rotation, effecting an energy exchange from the "faster" gases to the inboard angular "slower" rotor segments, then said gas under pressure is channeled to the outer periphery of the original moving electrolyte, and then electrically dynamically recombined back into a liquid state.

Optional features to assist this process include catalytic agents both for decomposing and recombining. Also, the Base Element may be a carrier of the electrolyte rather than be the electrolyte.

An alternative mode is the use of a suitable electrolyte which essentially will decompose when one electrical polarity is applied and recompose when the opposite is applied.

My preferred embodiments utilize a plurality of Tesla type rotors for Species B and C to effect power output via a change in angular momentum; however, any other mechanical means to utilize changes of pressure for power production may be employed, in addition to the other means stated elsewhere herein.

Other reviewed prior art setting forth essentially the same teachings include:

3,194,008 Baumgartner July 13, 1965
3,907,454 Punton Sept. 23, 1975

Further objects and advantages of my invention will become apparent from a consideration of the drawings and ensuing description thereof.

Brief Description of Drawings

In this generic invention, each preferred embodiment is considered separately. Figures 1 through 15 relate to embodiments in Species A, Base Element/Fixed Displacement Light Element. Figures 15 through 19 relate to embodiments in Species B, Base Element/Variable Displacement Light Element. Figure 21 relates to embodiments in Species C, Base Element/Derived Light Element.

Best Modes for Carrying Out the Invention

Description/Operation — These two categories are considered together for each preferred embodiment. An evaluation of the relative merits and demerits will be given after all Species are set forth.

Species A: /1/ Rotating Outer Case Engine

Figure 1 is a side view cross-section schematic

Figure 2 is a top view schematic

Figure 3 is an end view schematic

In Figure 1, the center of rotation for the power output shaft 1 is eccentric to the center of rotation 2 of the rotating outer case 6. Fixed displacement floats 3 with a curved surface on the side away from center of rotation are mounted upon a means of support from the power output shaft 1. A slightly movable shroud 4 to guide Base Element fluid 5 flow is mounted concentric to power output shaft 1. Rotation of outer case 6 induces circular clockwise movement of fluid Base Element 5. Shroud 4 location induces a constriction and hence more rapid fluid 5 flow of Base Element at point 7. This causes fluid Base Element 5 at point 7 to be moving more rapidly than float 3, hence fluid 5 will tend to entrain around float 3 surface, moving inward toward the center or rotation, and by virtue of Newton's 3rd Law of Motion and Daniel Bernoullii's Laws of Fluid Mechanics, cause a corresponding "outward" force upon said float 3, inducing it into the faster moving fluid 5 at areas 7 and imparting energy to float 3. This constitutes an application of Dynamic Induction as defined.

Relative Gravity in the Power Output State is an expression of the effects of centrifugal/centripital forces of the fluid 5 upon the immersed float 3 as depicted at point 8. During said Power Output Stage fluid 5 velocity and float 3 velocities are more nearly equal than during Induction Stage at areas 10-9 — through much of the power stroke. Since power output shaft 1 is mounted eccentric to the outer

case 6 center of rotation 2, said immersed float will tend to rotate power output shaft 1 clockwise as it rises out of the fluid 5, with a corresponding depth reduction of fluid 5, which is the power stroke. Area 9 represents a fluid 5 area which is at "minimum depth" after float 3 has risen from the fluid 5. The fluid propelling inner walls of the outer case 6 may either be smooth or somewhat serrated in the indicated direction of movement, or with fixed or variable vanes attached thereto. Another fluid impellor system 12 may be included, mounted upon the general rotating float assembly 3. Various means of enhancing entrainment of fluid 5 upon the float, such as fixed and/or movable vanes, are intended as optional but not depicted herein. The angular momentum exchange factors of float 3 and fluid 5 are self-cancelling in this embodiment.

Geometric Analysis of Forces

For shroud 4 utilizing embodiments of Species A a geometric analysis of forces is now in order. The following analysis is shown in Figures 4 and 5: Figure 4 depicts a schematic of angular forces for a hypothetical Rotating Outer Case Engine if there was no shroud 4. Figure 5 depicts the actual general operating state. In Figure 4 position A depicts float 3 just as it would begin to enter Base Element 5, position B is maximum fluid displacement condition, and position C is the float3/Liquid 5 separation point. Obviously the bouyancy effect forces would be equal since, besides other considerations, the sum total of adverse angular/bouyancy effect would be equal to the proverse angular bouyancy effect.

Figure 5 depicts a schematic of the operational effect of said shroud 4. The effective adverse bouyancy angular effect may be made considerably less by using some means, such as a shroud, to reduce said effect. Thus with this or a similar means the adverse bouyancy angular effect is less

than the proverse bouyancy angular effect in the power output stage. Shroud location may be somewhat adjustable for varying efficiency.

Liquid Light Element Species is not depicted in drawing but has essentially the same design features as Rigid Light Element Species with the essential difference being float 3 is a fluid filled membrane which is flexible.

Other optional means of float boundary layer control, not depicted, include the use of a cylindrical rotation float mounted in the same manner as the depicted fixed float 3, said rotating float rotating about its own center axis and may be revolved in either direction with a means of linking said float with the power output shaft 1, said float rotated clockwise during the depicted induction stage to assist fluid entrainment upon said float and counterclockwise during the power output stage to assist in maintaining a proverse Base Element fluid level upon the lee side of the float. Another option of said revolving float would be one rotated only by the action of said Base Element fluid 5 thereupon. Individual floats 3 may be mounted in the rotational assembly opposite to each other, or another means of counterbalancing, so the effective specific gravity of the immersed portion of the float 3 is zero.

Means of throttle control include: Partial rotation of shroud 4, variance of liquid 5 amount, variance of rotios of the linked rotation rates of the power output shaft 1 in relation to outer case 6 rotation rate. Outer case 6 is propelled by linkage to power output shaft 1. Means of linkage is not depicted. Outer case 6 and power output shaft ratio are assumed to be 1:1 in this embodiment but any ratio, constant or varied, may be used.

Species A: /2/ Fixed Outer Case Engine

Figure 6 is a side view cross-section schematic

Figure 7 is an end view cross-section schematic

This embodiment is basically the same design as the prior

unit /1/ with the essential difference being the addition of a fixed outer case 13 which houses a "means for impelling" 6 the fluid Base Element 5. Impellor 6 may be sealed in its outer peripheral area or open to permit fluid 5 to encounter inner walls of outer case le.

Species A: /3/ Side Rotating Outer Case Engine and
/4/ Fixed Case Sideflow Engine

Figure 8 is a side view cross-section schematic

Figure 9 is an end view cross-section schematic at points 7/9

These embodiments are essentially the same design as prior units /1/ and /2/ with the difference being the shroud 4 is in closer proximity to rotating outer case 6 and said outer case 6 has a side gap between shroud 4 sidewalls and outer case 6 inner sidewalls for fluid 5 flow rather than as in units /1/ and /2/ with primary fluid 5 flow being between shroud outer surface and case 6 inner circumferential surface. Whereas the float 3 in prior units has essentially an outer curving surface parallel to axis of shaft rotation, this unit utilizes a float 3 design which is essentially a cylindrical radian from the power output shaft 1. Side bypass of fluid 5 flow is ended at about point 7 with float immersed by fluid 5 sideflow at about point 10. Unit may have fixed or rotating outer case per prior units /1/ and /2/ disclosure. Dotted lines case 13 on end view cross-section schematic denote the fixed case option which again is essentially the addition of a fixed case in close proximity to the means for fluid 5 propulsion.

Species A: /5/ Extended Case Engine
/6/ Rotating Extended Case Engine

Figure 10 is a side view cross-section schematic

Figure 11 is a top view schematic

Figure 12 is an end view schematic

This unit is essentially the same as the foregoing ones with certain differences. Fixed outer case 6 is a general "racetrack" design and two power output shaft 1 are employed

which are mounted eccentrically to the end center of case radii curvature in order to develop angular thrust. Shroud 4 fluid flow point is smaller than flow point 16, causing the desired fluid 5 acceleration for float 3 immersion. Outer case 6 may be fixed as in the /5/ mode or as in — /6/ entire unit may slowly rotate about point of rotation/shaft 17 — purpose of said rotation is to use a linked motion of case 6 to power output shafts 1 in order to recover some internal fluid friction losses, said outer case 6 linked to rotate relatively slowly in comparison with power output shaft 1 rotation.

Species A: /7/ Wave Extended Case Engine

Figure 13 is a side view cross-section schematic

This unit is essentially the same as the prior /5/ and /6/ Extended Case engines with the distinction that instead of a shroud 4 to generate a faster fluid flow hence float induction means, this unit uses a displacement type wave generator 18 which operates in desired synchronization with the floats 3 to achieve float immersion. Said synchronization may also be varied for a means of throttle control, entire unit also may be rotated as with embodiment /6/ for fluid friction loss energy recovery. Internal shroud 4/16 serves as fluid 5 guide.

Species A: /8/ Shroudless Engine

Figure 14 is a side view cross-section schematic showing a plurality of floats 3

Figure 15 is a side view cross-section schematic showing a one float 3 unit

This design is essentially the same as units /1/ and /2/ with the distinction being the elimination of shroud 4 in said units and instead achieving the required immersion velocity difference by a means of linking the rate of movement between fluid impellor 6 and float 3 in order to achieve relatively different velocities between said units at different points of the operating cycle. Thus, at point 7 the float 3 is moving substantially slower than the fluid 5 and

during the power output stage position generally 10 to 9 the float 3 and fluid 5 rotational speeds more nearly approximate each other due to eccentric gearing or other suitable means. Variance of relative speeds may also be used as a means of throttle control. All float assemblies are properly counterbalanced.

Species B: /9/ Circular Gas Engine

Figure 16 is a side view cross-section schematic

Figure 17 is a top view cross-section schematic with gas intake moved 90° to better depict same

This species utilizes a Base Element 5, normally a liquid although a gas may be employed, in combination with a gas Light Element 22. Power output shaft 1 is located concentric to case 6. In operation, a means of circular power movement, such as the depicted Tesla type rotors 18 are immersed in said fluid 5 almost to the exhaust holes 23 in said rotors 18. A means of Light Element gas 22 injection into fluid outer periphery path is accomplished by valve action 19 which creates an intermittant cavity in said fluid 5 for the gas 22 to enter. Valve action 19, or the like, may operate powered by the liquid 5 flow independently or in sequence with another valve, optionally linked to power output shaft 1. This valve in protrusion position into fluid 5 flow effects the angular momentum aspect of the fluid 5 upon the rotor 18, which is a self-cancelling action in energy requirement. Another valve action 20 may be used in conjunction with valve 19 to better effect gas 22 entry into fluid 5. A variety of valving means may be employed. Unit may operate either at atmospheric pressure or sealed to permit high pressure closed cycle operation. For the depicted closed cycle operation, pressurized gas 22 at point 20 intermittantly enters fluid 5 flow, said pressure immediately being converted to velocity effort to match or attempt to excel fluid 5 velocity. Gas 22 fluid intake velocity is also a function of gas 22 operating pressure, intake aperture size and design and flow path

efficiencies in combination with the aforementioned angular momentum factors. Bouyancy of gas 22 causes it to move toward center of rotation and between rotors 18, via angular momentum change imparting energy to rotors 18. Gas 22 leaves through rotor exhaust holes 23 and then is ducted through channel 21 to return and repeat cycle, maintaining original pressure. The Light Element may also be a liquid which would basically perform in a similar manner and an embodiment of same is not depicted.

Species B: /10/ Extended Gas Engine

Figure 18 is a side view cross-section schematic

Figure 19 is an end view schematic

Figure 20 is a top view schematic — one gas circuit shown

Unit uses Tesla type rotors, the two power output shafts 1 mounted concentric with end of case 6 curvatures. Purpose of this design is to produce a valveless gas 22 induction method into fluid 5. This is accomplished by the relatively long and shallow intake angle of said fluid 5/gas 22 juncture. Gas during power output stage will progressively migrate to rotor exhaust holes 23, thence ducted to point 25. Some Base Element fluid 5 will encounter guide 24, but most will flow in the general "racetrack" pattern.

Species C: /11/ Electrolysis Engine

Figure 21 is side view cross-section schematic

This Species derives its Light Element 22 from the Base Element 5, which is an electrolyte or a carrier of an electrolyte, partially changing a liquid 5 into a gas 22 by electrolysis. Design /9/ is also used in this embodiment.

Electrodes 26 partially decompose the moving liquid 5, then same power output bouyancy, gas 22, is returned through channel 21, rotary valve 19 or the like creates fluid 5 cavity and gives recombination back pressure resistance when valve is closed to channel 21. Gas is recombined into a fluid at point 27 by electrical means.

Changing or alternating electrical polarity systems may

be used, and for some chemical combinations such as ammonium hydroxide, a shifting of electrical polarity will cause "fluid to gas and vice versa."

Catalytic agents such as sulphuric acid and carbon carbonate may be used to aid electrolyte decomposition and recomposition, respectively.

Species may also use Fluid Friction Recovery options of linking rotating outer case to power output shafts when "racetrack" type case as described elsewhere in this disclosure is employed.

All Species may optionally employ magnetically dissimilar elements in moving and relatively non-moving unit elements to directly generate electricity.

All Species may optionally employ a Thermal Generation Mode, using the flow of one or more of the working elements in combination with convention means for heating and cooling fluids.

All Species may employ a means of starting, such as a conventional shaft-turning electrical starter/generator/battery combination, or the like.

All Species as desired may use a means to enhance fluid lubrication, such as the addition of Teflon particles in suspension in said liquid or liquids.

Species which are pressurized will have adequate rotary and static sealing means, and as an integral option may have a suitable means, such as a gas pump, to replace leaked gases.

Merits and Demerits of Respective Species — Species A and C should be best for power production in the form of mechanical rotary shaft effort and electrical generation. /1/ Rotary Outer Case Engine embodiment has the highest inherent efficiency. Its disadvantage is the need to properly allow for operational fluid imbalance effect, which is a matter of fluid dynamics. Fixed case designs give potentially greater structural stability and may be cheaper to

build. Species B is best for internally creating airconditioning and heating applications, using a Light Element gas flow. Rotating outer case design can reduce internal skin friction losses in some applications but usually at a greater cost than fixed outer case designs. Extended Gas Engine /10/ has basically only two mechanical moving parts turning at a constant speed. Species A and B are inherently non-explosive and hence safer to operate than conventional engines.

Very high power output is possible with all species because of the applicability of laws of centrifugal/centrepital force, i.e., when elements are traversing essentially a circular path the basic operating pressures are increased approximately as the increase of the square of the velocity of the translated Base Element effect upon the Light Element. Species A embodiments have the highest power output potentials of units described because of fixed displacement of Light Element as compared to a variable displacement of a gas in some other embodiments. All gas Light Element embodiments work more efficiently when pressurized. Pressurizing costs, such as seals, must be balanced against desired performance and other design considerations.

While the foregoing descriptions contain many specificities, these should not be construed as limitation on the scope of the invention, but rather as exemplifications of this generic species. Many combinations of the art set forth in this disclosure are possible. Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.

Claims

Having described the invention, I claim as new:

1. A two stage method for production of energy comprising:
   A. Means for an induction stage utilizing energy transfer between respective working elements of different specific gravities to achieve an induction of a moving element or elements of lesser specific gravity into the general outer peripheral area of travel of a closed cycle path of a moving element or elements of a greater specific gravity, said induction means operating in addition to angular momentum energy transfer factors, in combination with,
   B. Means for a power output stage following in sequence to said induction stage to utilize and to maximize power output derivation from translated velocities and changes of direction of the moving elements in combination with the bouyancy effects of elements of different specific gravities inter-reacting, said power output means operating in addition to angular momentum energy transfer factors.

2. The invention as defined in claim 1. and further including: means for containing said reaction.

3. The invention as defined in claim 1. and further including: means for energy exchange between Base Element and Light Element.

4. The invention as defined in claim 1. and further including: means for throttle control.

5. The invention as defined in claim 1. and further including: means for propelling the Base Element.

6. The invention as defined in claim 1. and further including: means for effecting rotary motion from the bouyancy effect.

7. The invention as defined in claim 1. and further including: means for creating geometrically smaller adverse angles of bouyancy thrust in the induction stage than geometrically larger proverse angles of bouyancy thrust in the power output stage.

8. The invention as defined in claim 1. and further including: means to employ Bernoullii's Laws of Fluid Pressure and Velocities to facilitate induction stage.

9. The invention as defined in claim 1. and further including: means to employ Newton's Laws of Motion to facilitate induction stage.

10. The invention as defined in claim 1. and further including: means for constant entry of Light Element into Base Element.

11. The invention as defined in claim 1. and further including: means for intermittant entry of Light Element into Base Element.

12. The invention as defined in claim 1. and further including: means for utilizing angular momentum forces to aid in entry of Light Element into Base Element.

13. The invention as defined in claim 1. and further including: means for fluid wave generation to facilitate induction stage.

14. The invention as defined in claim 1. and further including: means to counterbalance fixed displacement float so effective specific gravity of immersed portion of said float is zero.

15. The invention as defined in claim 1. and further including: means for varying the respective velocities of Light Element and Base Element.

16. The invention as defined in claim 1. and further including: means to pressurize electrolyte by imparting velocity and changes of direction thereto.

17. The invention as defined in claim 1. and further including: means for decomposing the Base Element.

18. The invention as defined in claim 1. and further including: means of catalytic action for electrolysis species for decomposition of electrolyte.

19. The invention as defined in claim 1. and further including: means for recomposing Base Element.

20. The invention as defined in claim 1. and further including: means of catalytic action for recombination of electrolyte.

21. The invention as defined in claim 1. and further including: means for generation of electricity within the operating cycle.

22. The invention as defined in claim 1. and further including: means for generating thermal differentials within the operating cycle.

23. The invention as defined in claim 1. and further including: means for starting apparatus.

24. The invention as defined in claim 1. and further including: means for energy recovery of internal fluid friction losses.

25. The invention as defined in claim 1. and further including: means for enhancing fluid lubrication.

26. The invention as defined in claim 1. and further including: means for sealing apparatus.

27. The invention as defined in claim 1. and further including: means for pressurizing apparatus.

FIG. 1

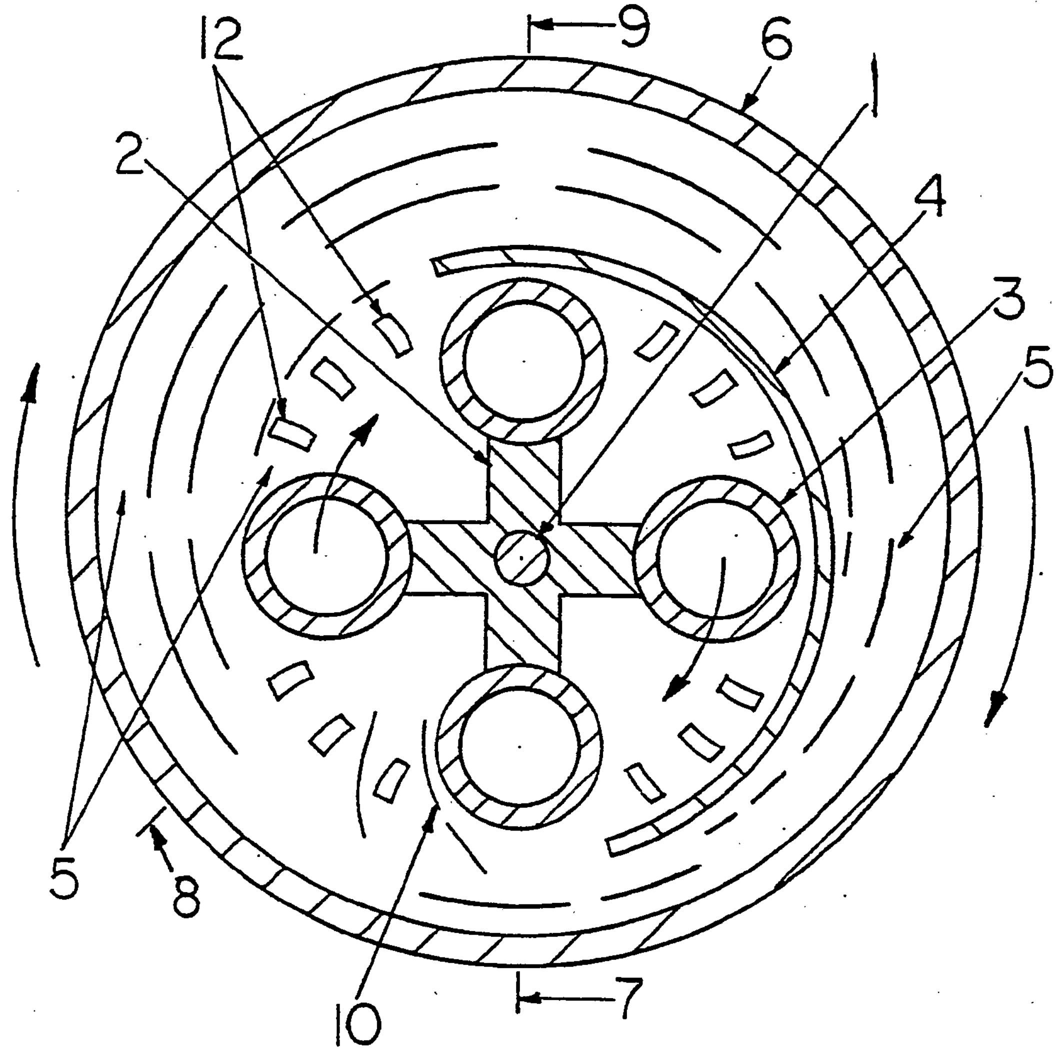


FIG. 2

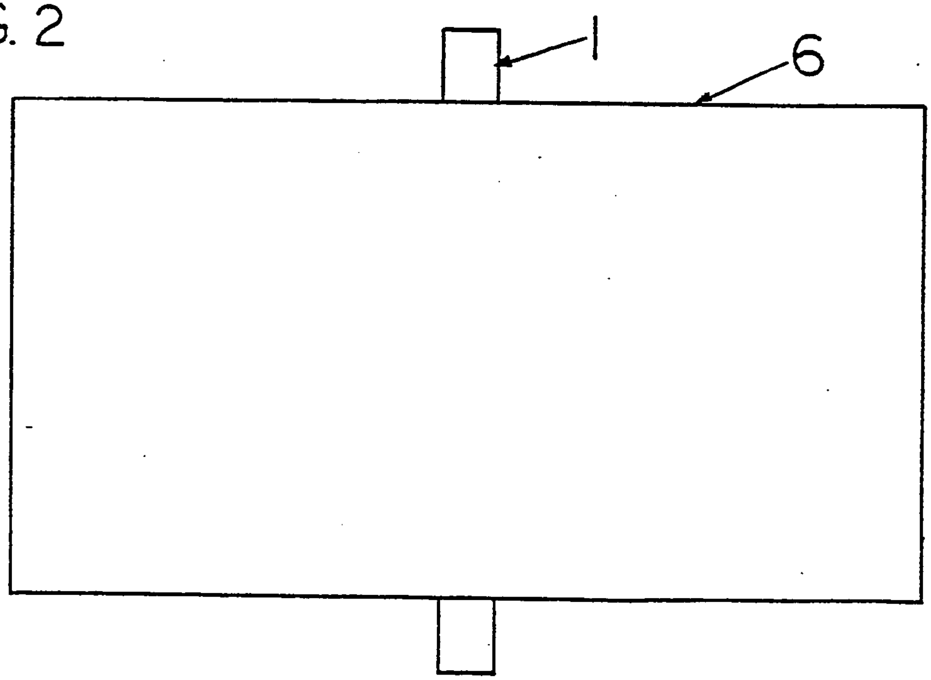


FIG. 3

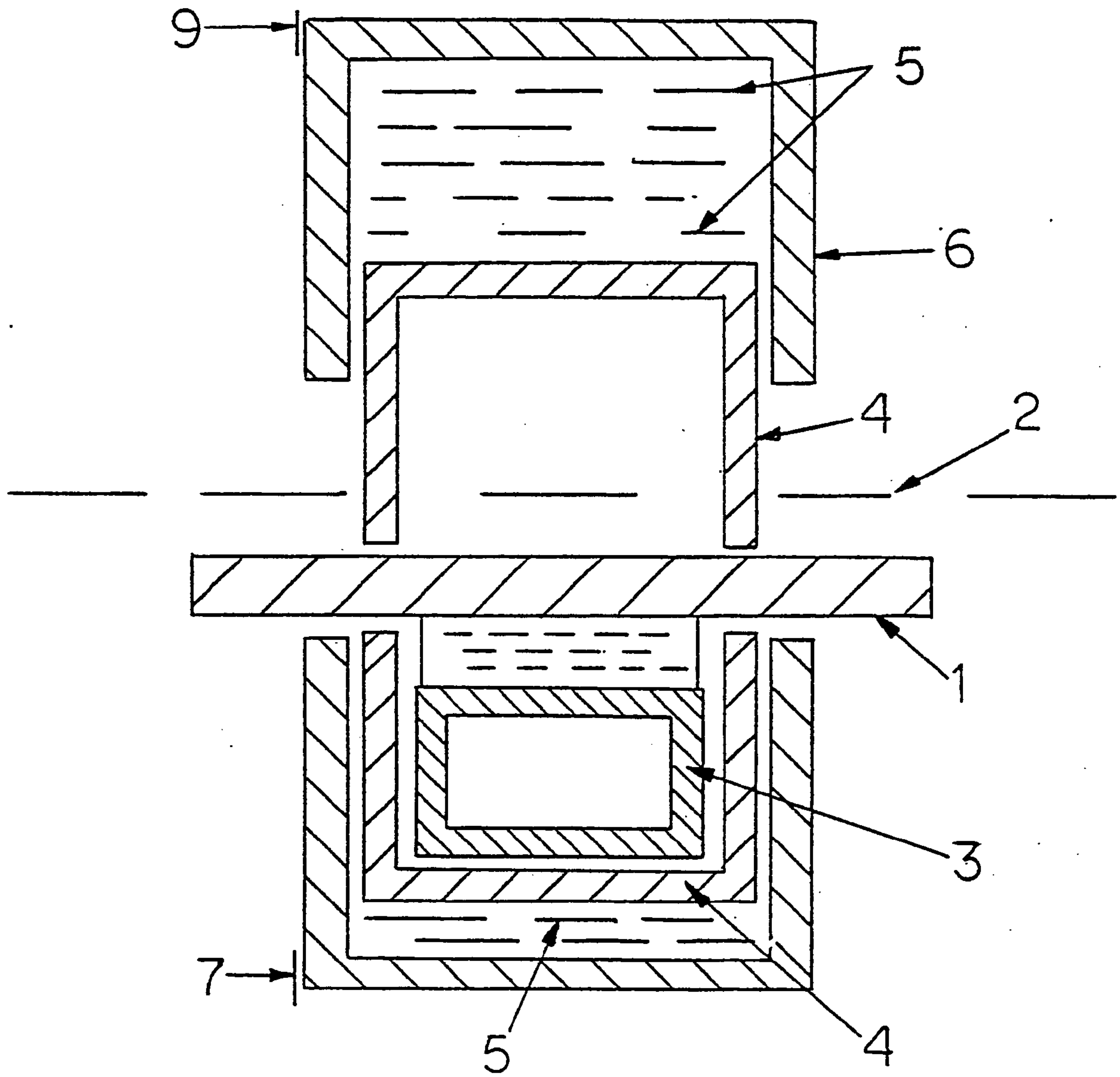


FIG. 4

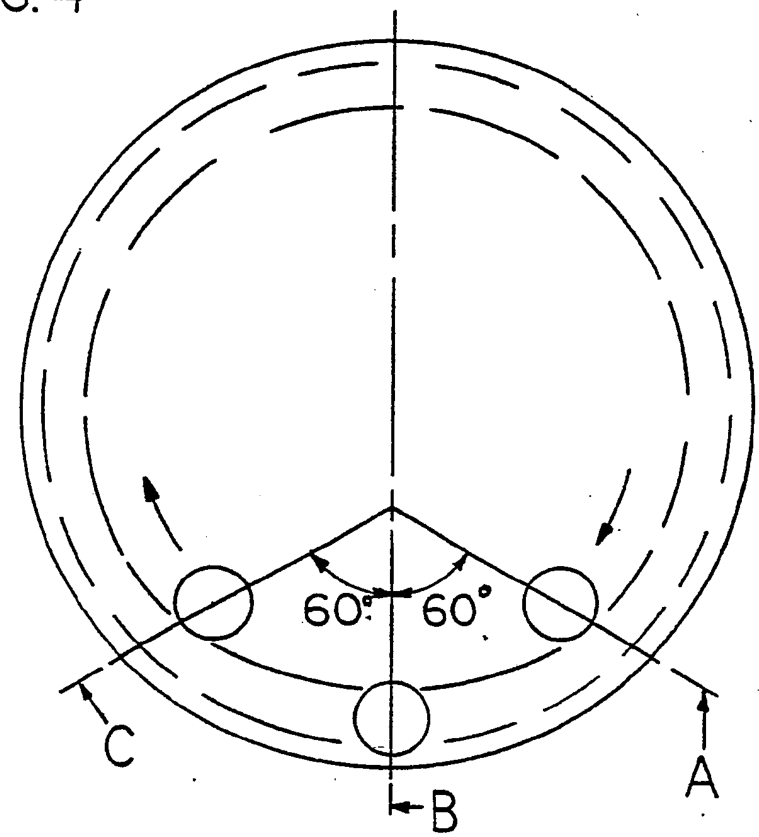


FIG. 5

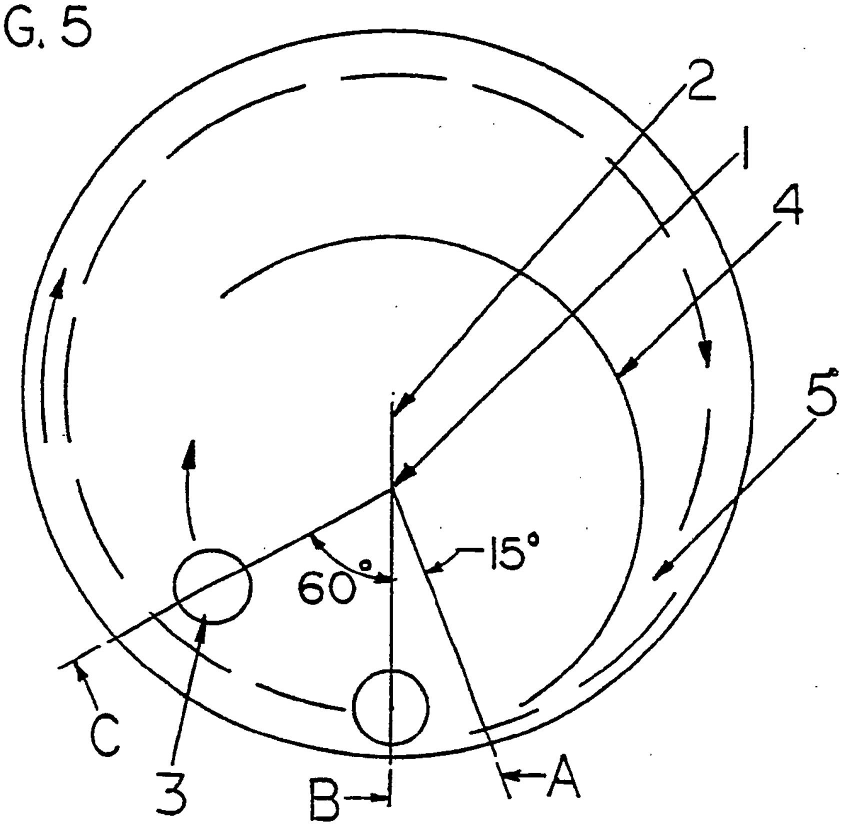


FIG. 6

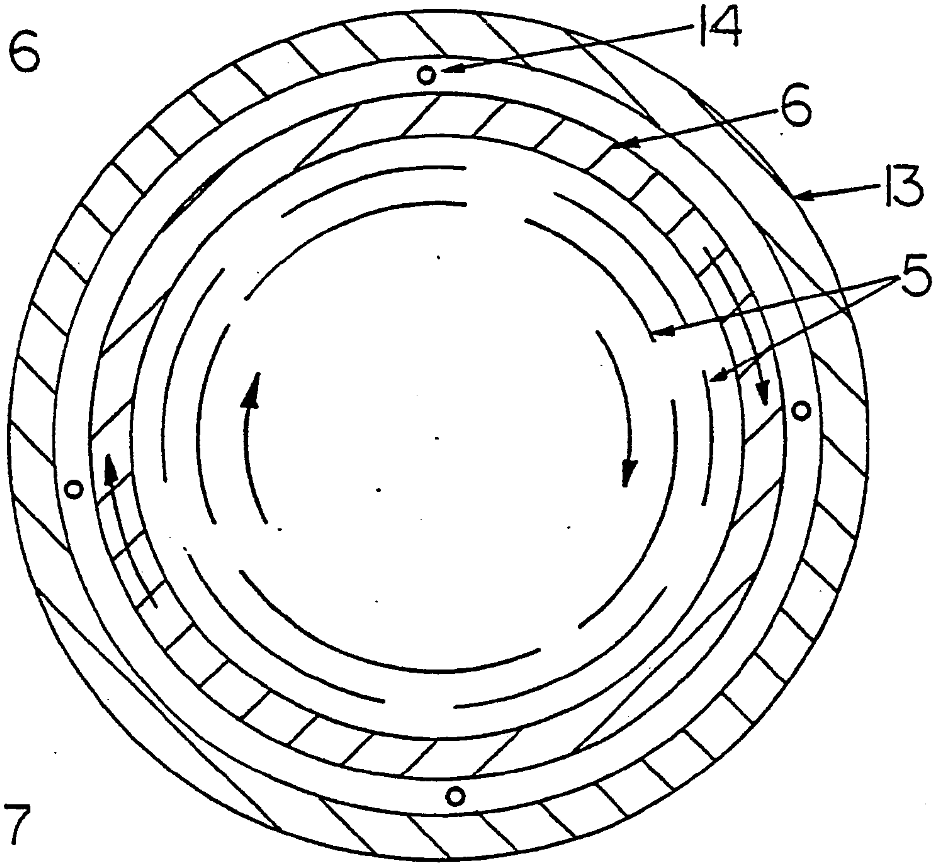


FIG. 7

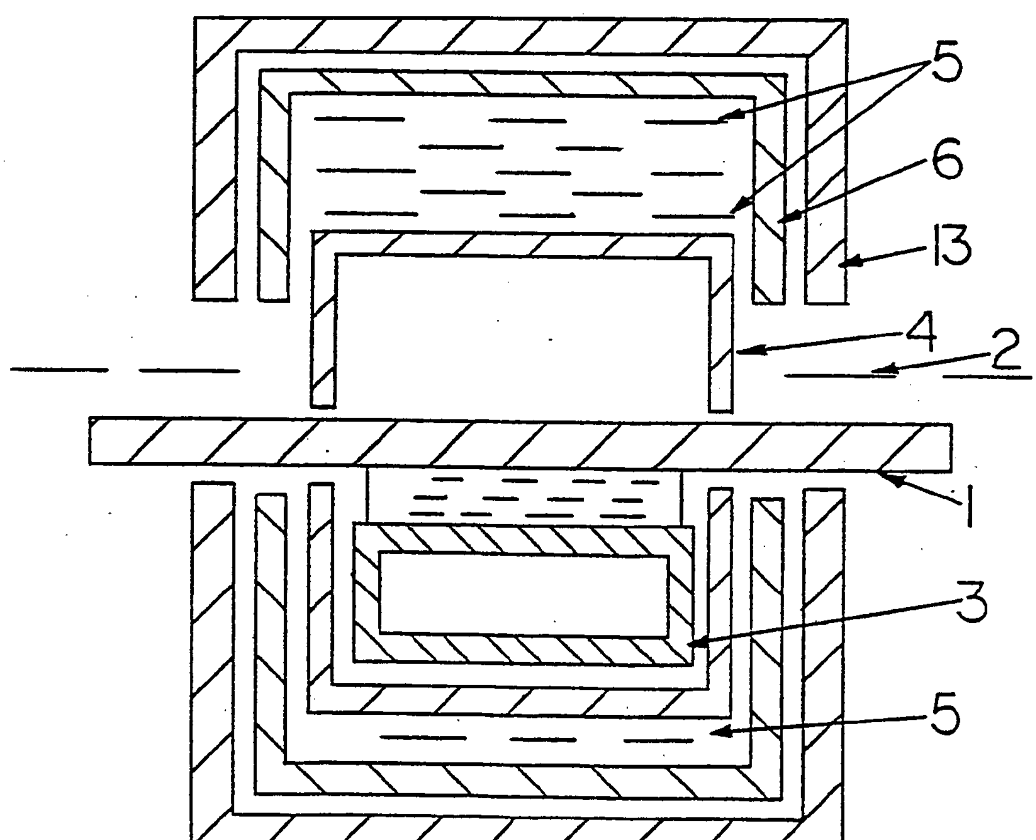


FIG. 8

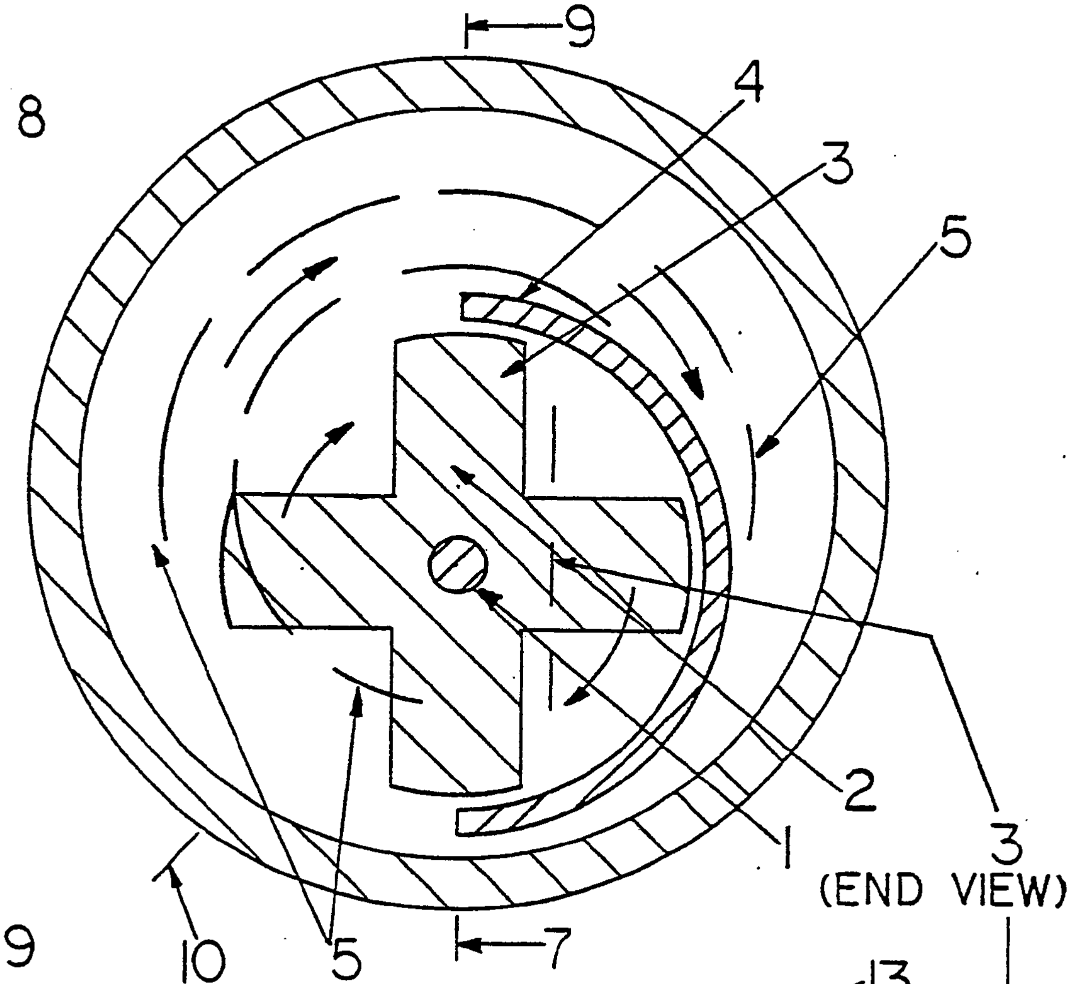


FIG. 9

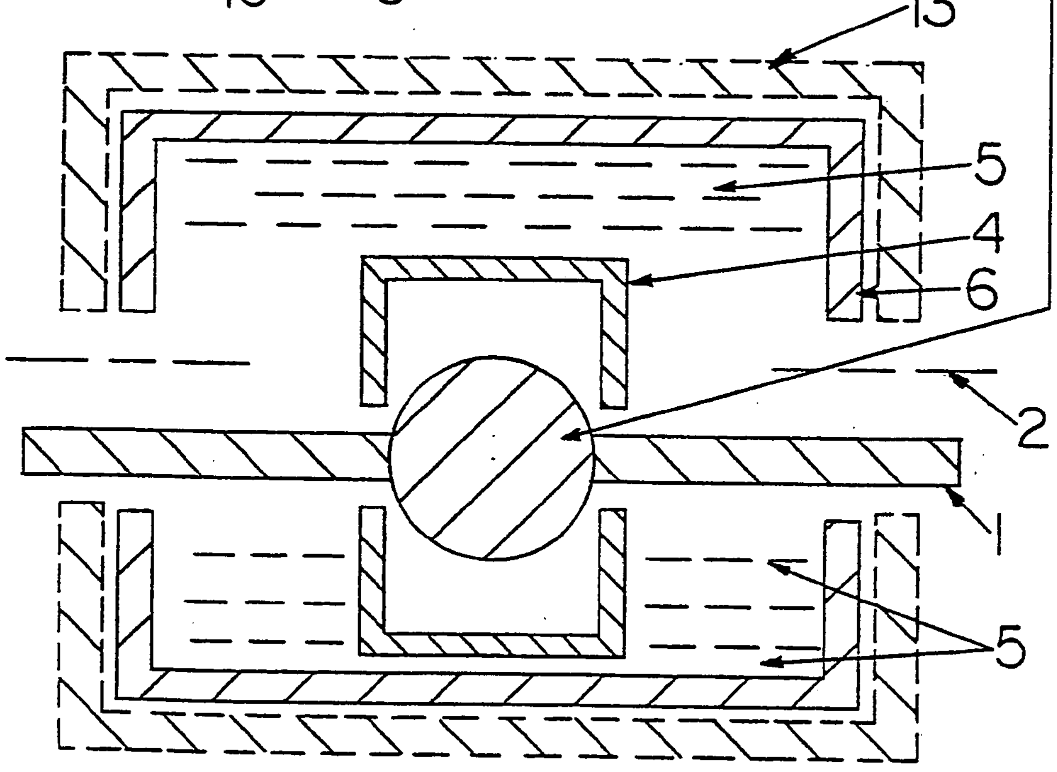


FIG. 10

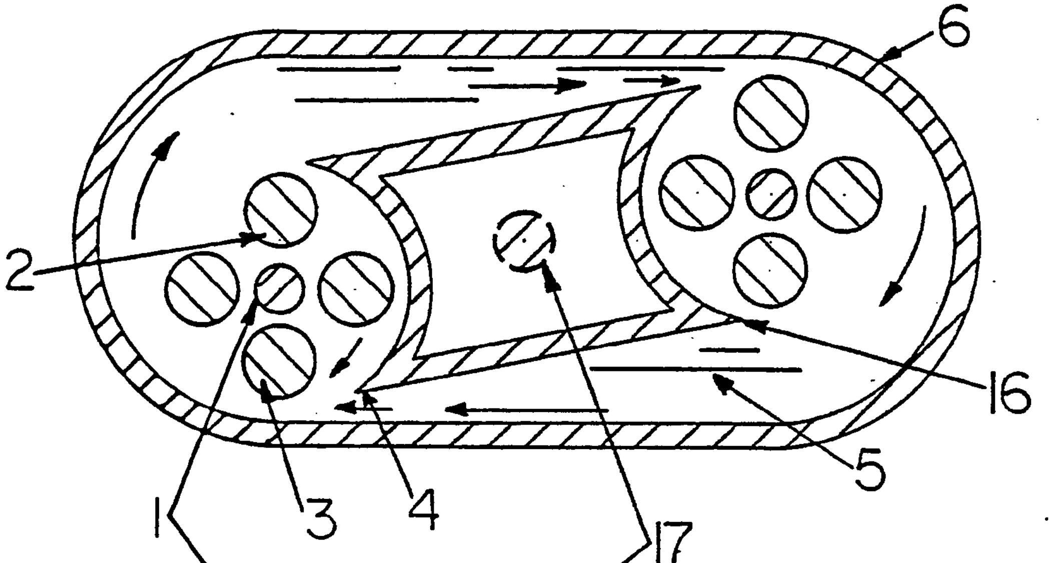


FIG. 11

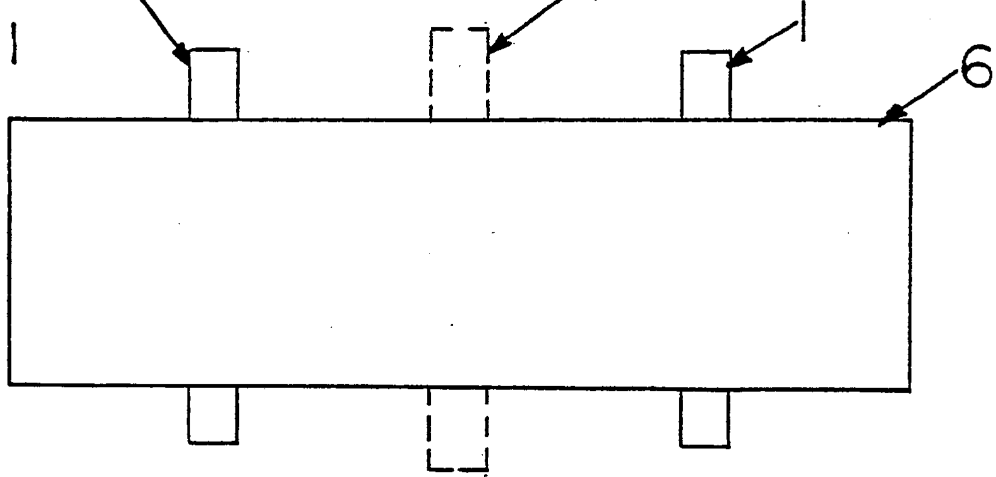


FIG. 12

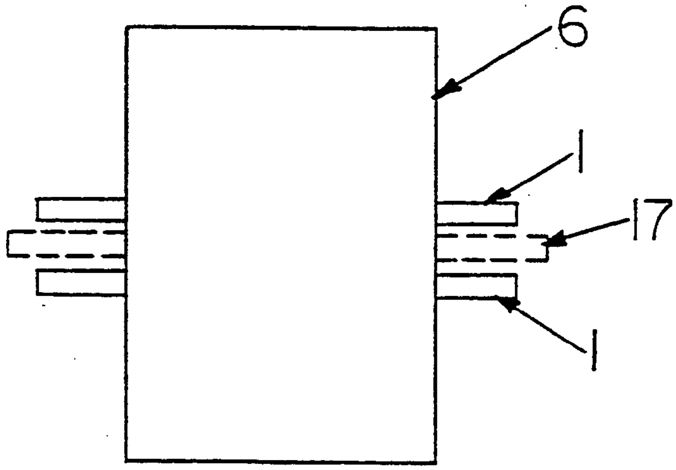


FIG. 13

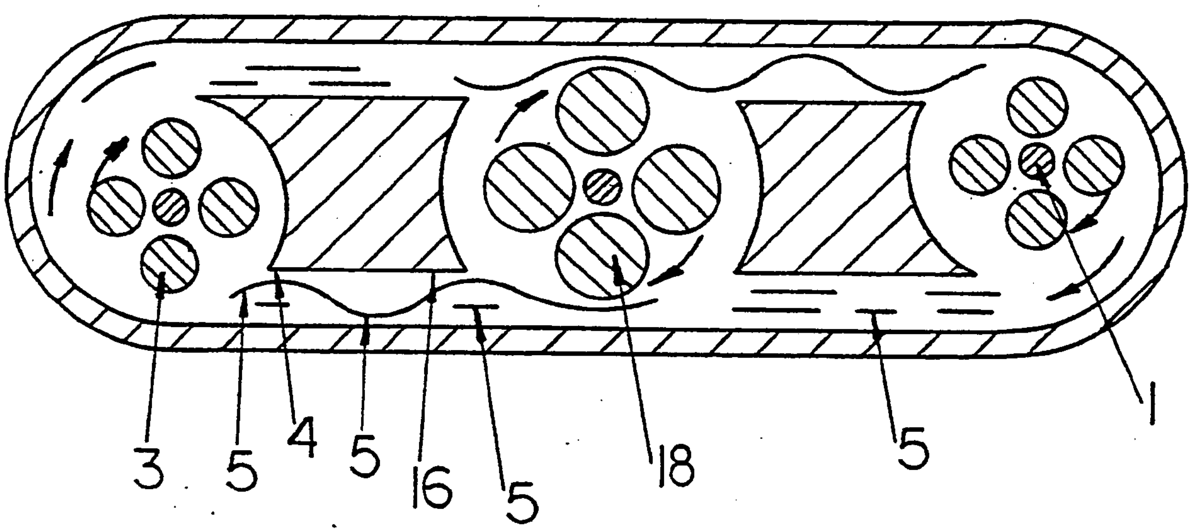


FIG. 14

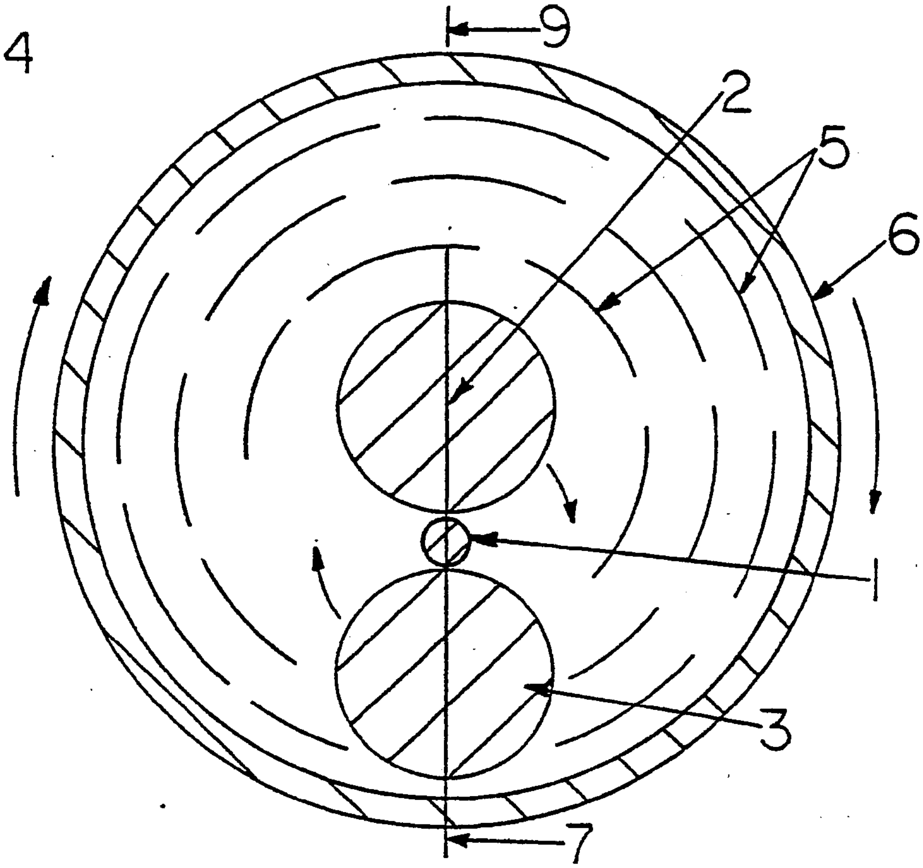


FIG. 15

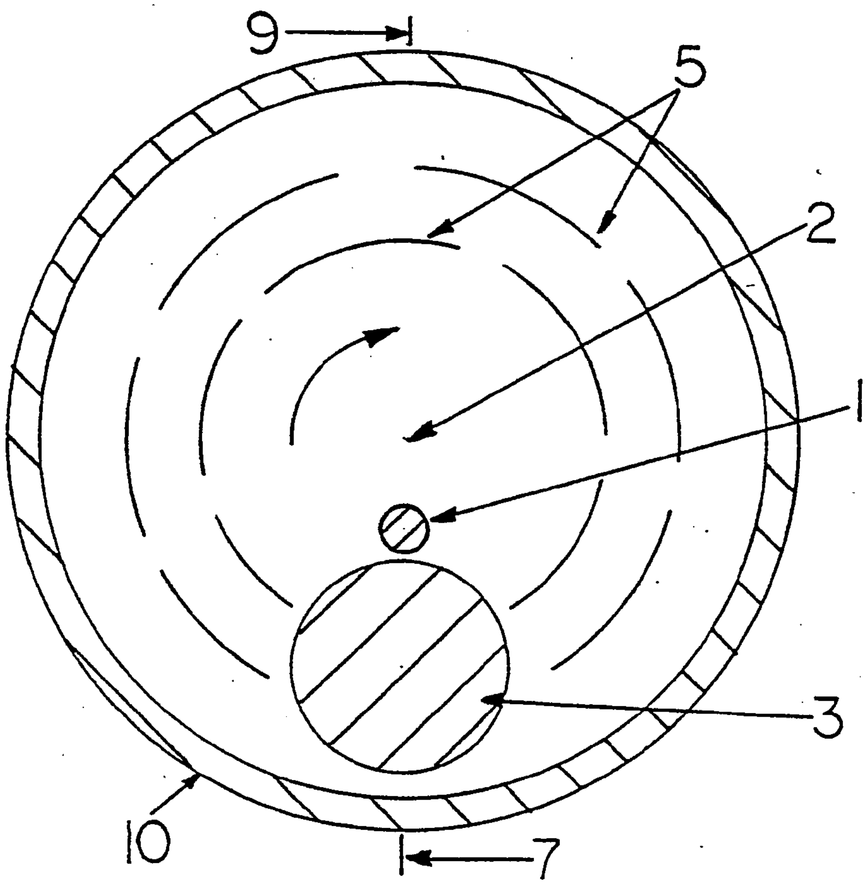


FIG. 16

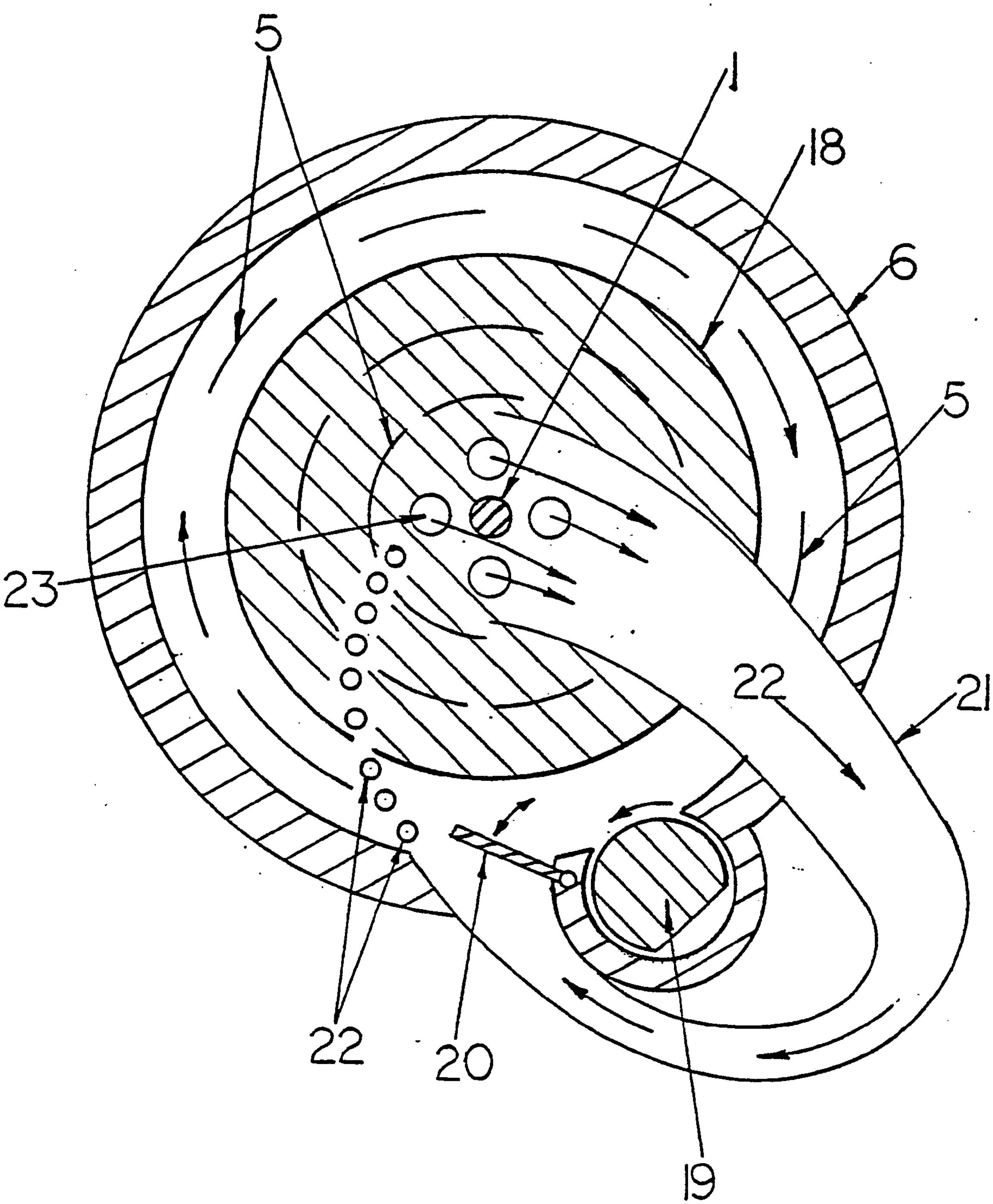


FIG. 17

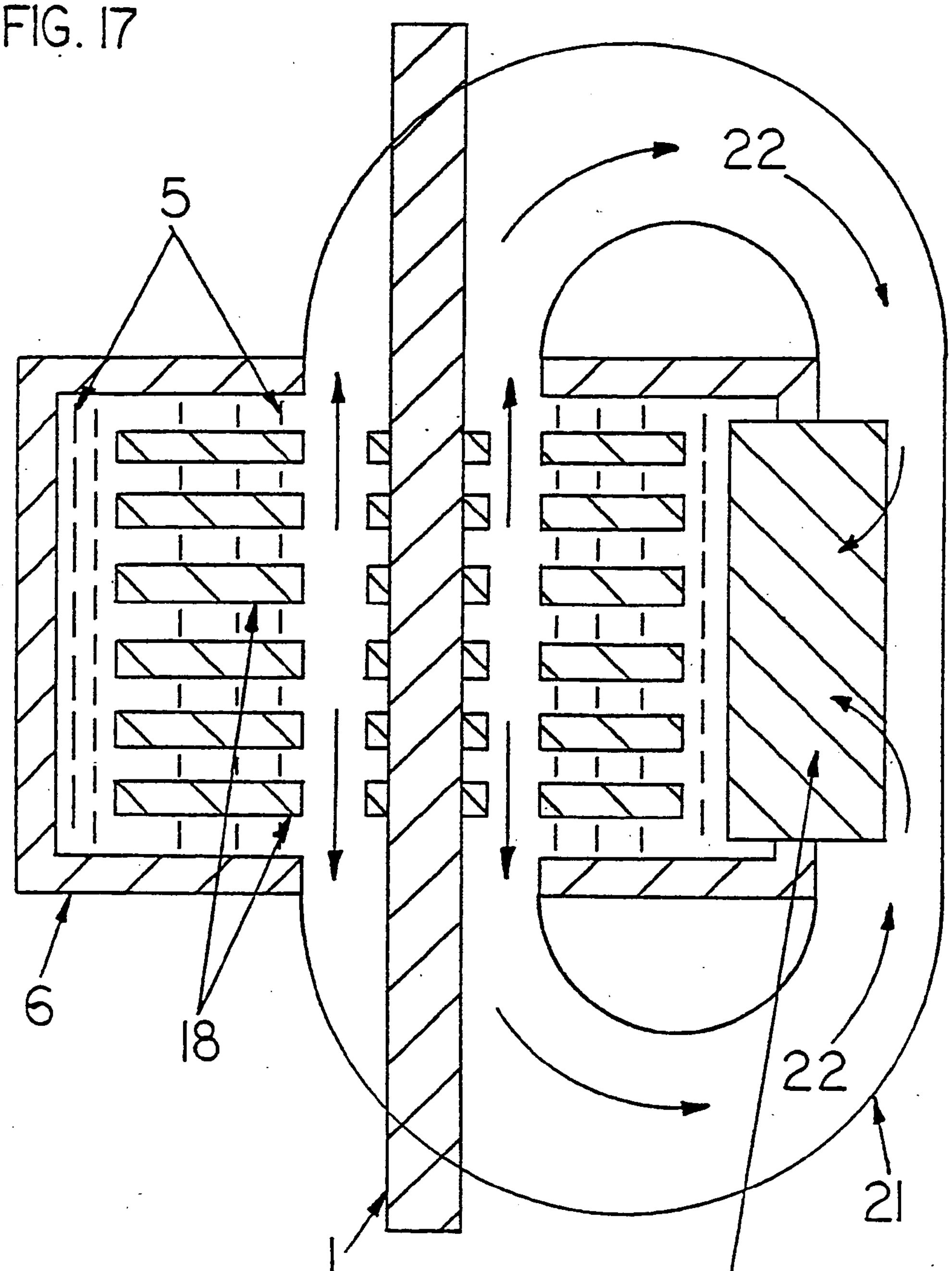


FIG. 18

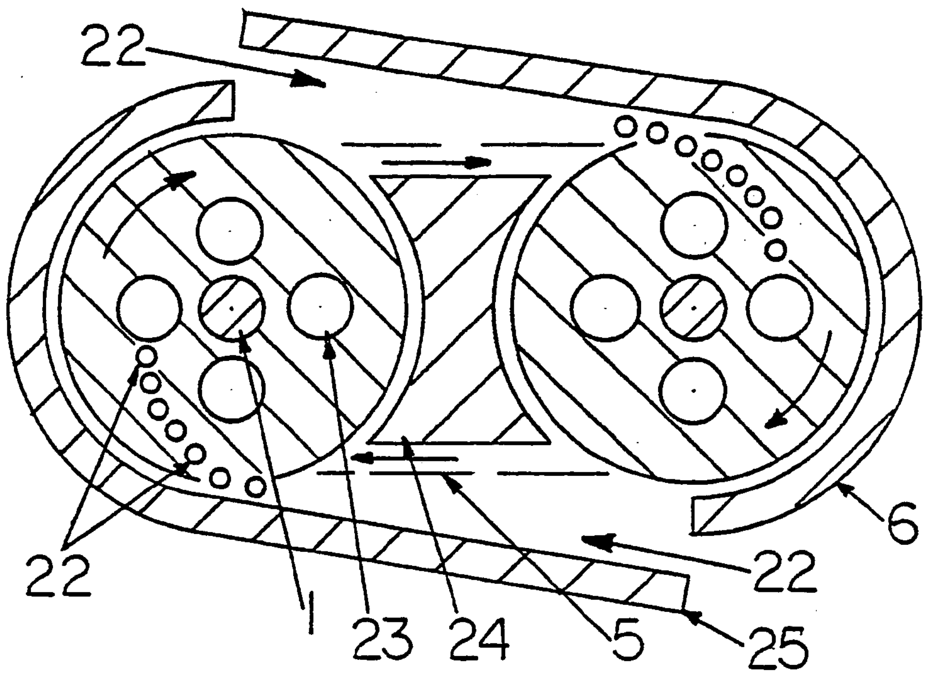


FIG. 19

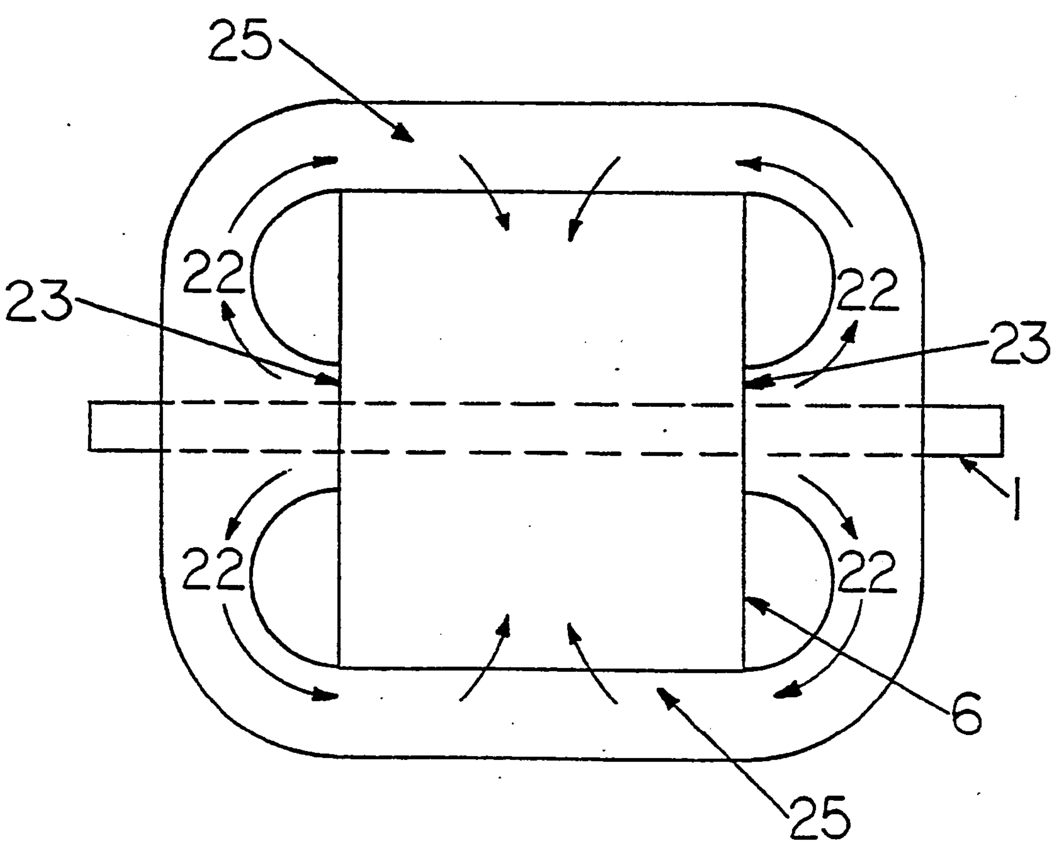


FIG. 20

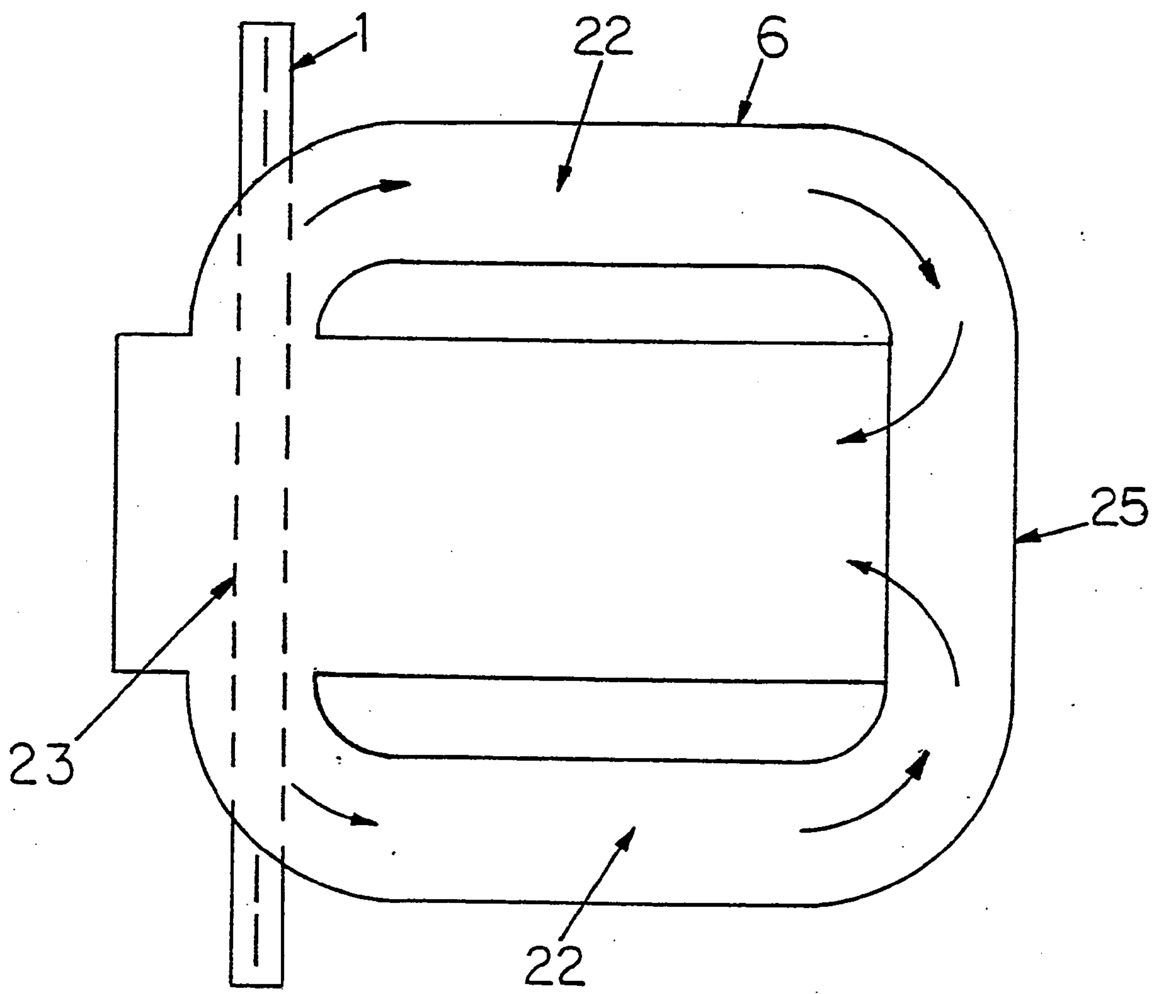
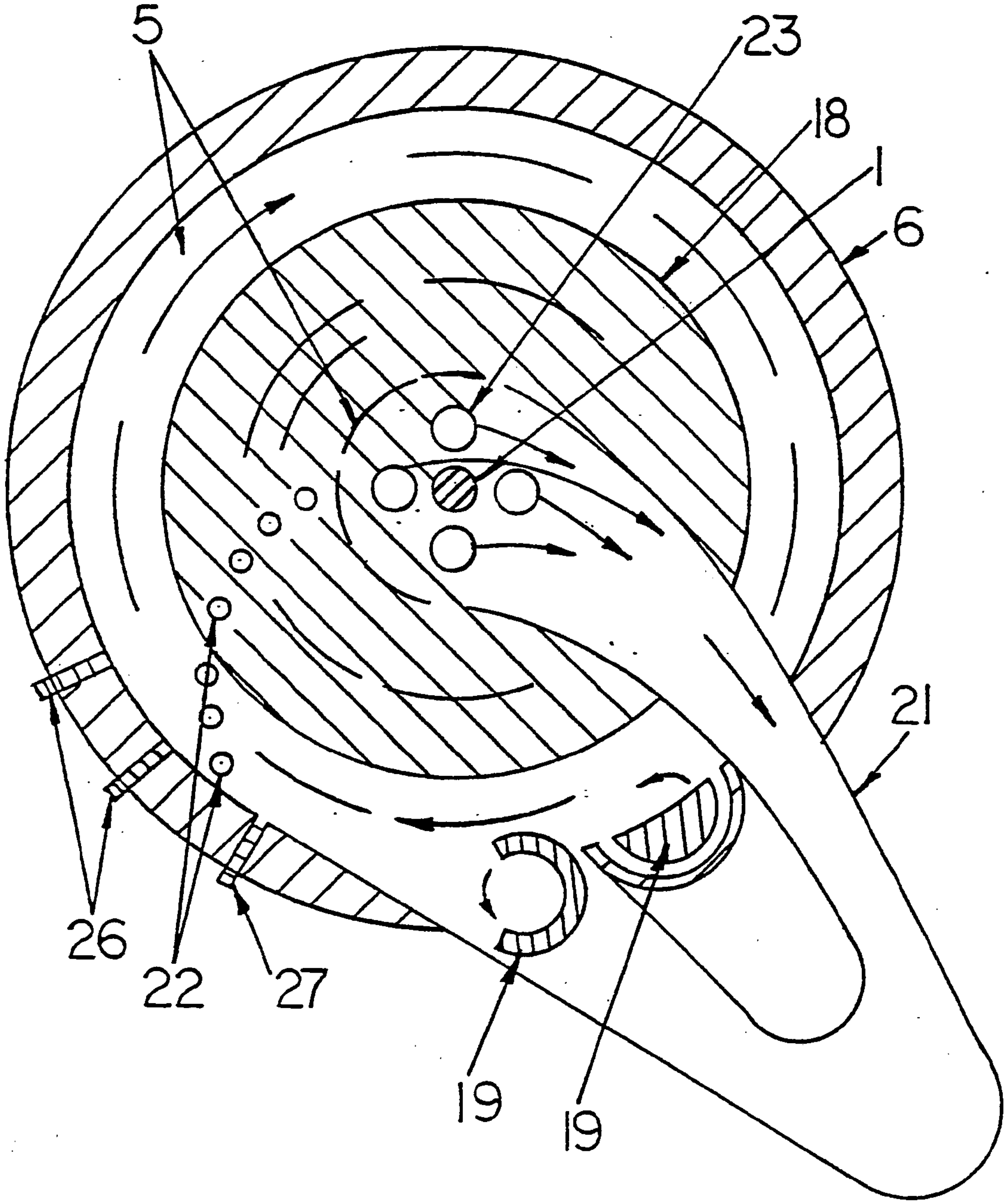


FIG. 21



INTERNATIONAL SEARCH REPORT

International Application No PCT/US 81/00151

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC

INT. CL3 F03G 7/00
US. CL. 60/721

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
US	60/495, 496, 721

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

NONE

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
A	US,A 2,513,136 PUBLISHED 27 JUNE 1950, BORSOS	1-27
A	US,A 3,360,926 PUBLISHED 02 JANUARY 1968, PARR	1-27
A	US,A 3,466,866 PUBLISHED 16 SEPTEMBER 1969, ESCHENFELD	

* Special categories of cited documents: [15]

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"L" document cited for special reason other than those referred to in the other categories

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"P" document published prior to the international filing date but on or after the priority date claimed

"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention

"X" document of particular relevance

IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
12 May 1981	08 JUN 1981
International Searching Authority [1]	**Signature of Authorized Officer [20]**
ISA/US	A. M. Ostrager

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